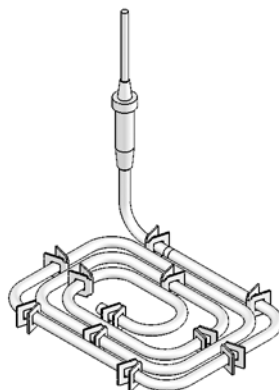


PTFE rod heaters GALMAFORM®

Installation instructions

E-MA 26

07.12/1



Please copy the following information from the model plate:

For PTFE rod heaters GALMAFORM®

U-F ■ ■ ■ ■ ■

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General information

1. General information

These installation instructions form an integral part of the device and must be kept available throughout the service life of the device.

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Supporting documents

Document	Content
Information/data sheet PTFE rod heaters GALMAFORM®	Product description and technical data
Resistance list (http://mazurczak.de or inquire to the manufacturer)	Recommended uses for materials in process media

1.1 Warnings

Warnings in this document are marked as follows:

 DANGER	Warning of immediate danger. Death, serious injury or serious damage will be the result of a failure to observe these warnings.
 WARNING	Warning of possible danger. Death, serious injury or serious damage is possible.
 CAUTION	Warning of possible dangerous situations. Minor injury or damage is possible.

General information

1.2 Symbols in the instructions

- ✓ Requirements that must be satisfied.
- ⇒ Work to be carried out (one step).
- 1. The first step in work that must be carried out.
Subsequent steps are numbered in ascending order.


1.3 Warranty and repairs

If you wish to make a claim under the warranty or required repairs, return the cleaned and neutralised PTFE rod heater to the manufacturer postage paid with details of the defect.

General safety instructions

2. General safety instructions

2.1 Proper usage

 DANGER	<p>Danger of explosion and fire. Do not use the PTFE rod heater in inflammable or explosive media.</p> <p>⇒ If necessary ask the manufacturer of the process medium for its specification.</p>
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The PTFE rod heaters GALMAFORM® are only designed for direct heating aqueous fluids.
They are only designed for commercial and industrial use.
Do not use them in inflammable or explosive fluids.

2.2 Standards and directives



PTFE rod heaters GALMAFORM® comply with the following requirements:

IP68

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- EN 60529, IP68 protection against immersion

General safety instructions

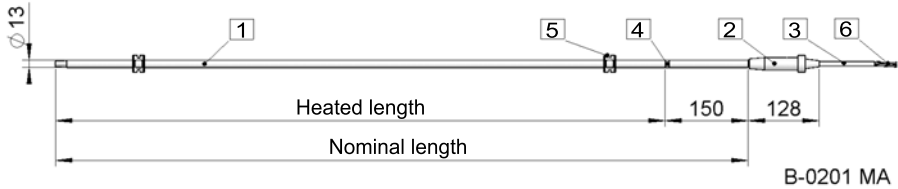
2.3 Safety instructions for the commissioning process

- ⇒ Read the installation instructions carefully before the commissioning process and follow the instructions contained therein.
- ⇒ Comply with the safety regulations for handling hazardous substances when dealing with such substances (hot, toxic or harmful).
- ⇒ You must comply with the accident prevention regulations, safety and operating regulations.
- ⇒ Comply with the relevant standards and directives.
- ⇒ Comply with the EMC Directive for the entire system.
- ⇒ Comply with the limit values for the proper use of the PTFE rod heater (see also technical data in point 3.3).
- ⇒ Ensure that the operating personnel surrounding area and process medium are safe at all times.
- ⇒ Make sure that no-one is in direct contact with the heated process fluid.
- ⇒ Ensure that the rod heater material and process medium are tailored to each other.
- ⇒ Only have the PTFE rod heater connected by a trained electrician.
- ⇒ Secure the PTFE rod heater permanently so it cannot be removed from the tank.
- ⇒ Protect the PTFE rod heater with an overtemperature guard and a dry operation guard.
- ⇒ Ensure that the operating personnel receive training and instruction in using the PTFE rod heater.
- ⇒ Document any changes and additions in this manual.
- ⇒ Keep this manual at the place of use of the PTFE rod heaters.

Product description

3. Product description

3.1 Construction



- 1 PTFE rod heater GALMAFORM®
- 2 PTFE connecting piece
- 3 PTFE connection cable
- 4 Ring-shaped marking for minimum immersion depth
- 5 PTFE distance piece AW 13 (accessory)
- 6 Connection wires

The connecting piece and the insulated cable are made from PTFE, pure white.

The minimum immersion depth is shown by an indelible, ring-shaped mark.

In addition to the L1, N and PE wires insulated with PTFE, there is also an uninsulated earth wire.

Sheathing

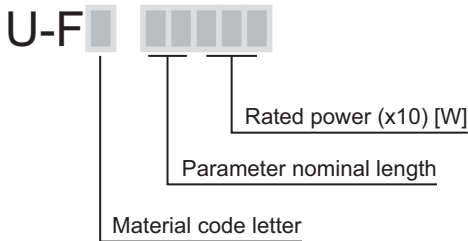
- PTFE rod heater GALMAFORM® U-FK...:
PTFE sheathing, pure white
- PTFE rod heater GALMAFORM® U-FC...:
PTFE compound sheathing, black

Product description

3.2 Model data

The model plate and the connecting piece contain all the main data relating to the PTFE rod heater. The model designation provides information on the specification.

PTFE rod heater GALMAFORM®



Material code letter:

K = PTFE, pure white, C = PTFE compound, black

Other information on the connecting piece:

Rated power P	[W]
Rated voltage U	[V] single-phase
Production number	6-figure

Other information on the model plate:

Article number	10-figure
Drawing number	Alphanumeric
Production number	6-figure
Test mark	Symbol
Index of protection	IP class

Product description

3.3 Technical data

3.3.1 PTFE rod heater GALMAFORM®

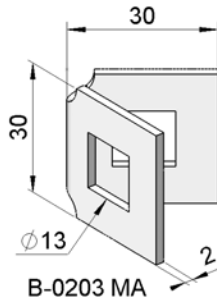
Type	U-FK 25175	U-FC 25200	U-FK 14070
• Rod heater sheath	PTFE, pure white	PTFE compound	PTFE, pure white
• Rated power [W]	1750	2000	700
• Rated voltage AC [V~]	230		
• Nominal length [mm]	2500		1400
• Heated length [mm]	2350		1250
• Rod heater cross section [mm]	Ø 13		
• Connection cable	2 m, without plug (L1, N, PE)		
• PE conductor connection	PE, gnye and uninsulated wires		
• Max. thermal load [W/cm ²]	1.8	2.15	1.8

Product description

3.4 Accessories

3.4.1 PTFE rod heater GALMAFORM®

Type	U-FK 25175	U-FC 25200	U-FK 14070
• Distance piece	AW 13 (B-0203MA)		
• Material	PTFE, pure white		



Installation

4. Installation

- ✓ Tank/system is depressurised.
- ✓ Rod heater material is chemically, mechanically and thermally resistant to the fluid to be heated.
- ✓ Visual inspection of the rod heaters shows no signs of cracking or damage.
- ✓ Cables not damaged or kinked.
- ✓ Heated fluid, aqueous solution max. 140 °C.

The PTFE rod heater can be mounted on the edge of the tank using a support.

The PTFE rod heater can only be placed securely in the tank providing the rod heater can never float or slide out of position. A clamp can be attached to the PTFE connecting in the tank by the client. Always push the corresponding distance pieces onto the rod heater. The closed side is not allowed to point towards the surface of the fluid. The distance pieces can be fixed to the heated or unheated area of the rod heater. Refer to the appropriate bending drawing for their positioning.

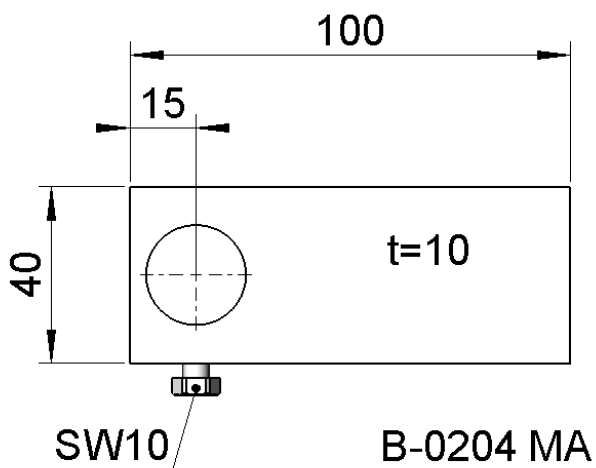
4.1 Installation aids

Support UH is available as an accessory to install and secure the heater correctly in the tank.

See drawing B-0204 MA for details of the dimensions for your method of installation.

Installation

4.1.1 Support UH for PTFE rod heater GALMAFORM®



Installation

4.2 Installing the PTFE rod heater



Danger of burns!

Hot tank parts, the heated PTFE rod heater or escaping process medium may cause serious burns.

- ⇒ Install the PTFE rod heater in such a way that the heated area is a minimum of 10 mm away from heat-sensitive materials and surfaces.
- ⇒ Install the PTFE rod heater in such a way that it maintains a minimum immersion depth. The minimum immersion depth is shown by a ring-type mark on the PTFE rod heater.
- ⇒ If, due to the bending shape, the mark for the minimum immersion depth is at the same level as the heated zone or is below this level then the heated part of the PTFE rod heater must be covered by fluid to a minimum depth of 20 mm.
- ⇒ Only attach and position the distance pieces on the PTFE rod heater when it is cold and not under tension.

Danger of short circuit!

Overheating or moisture in the terminal casing may cause a short circuit!

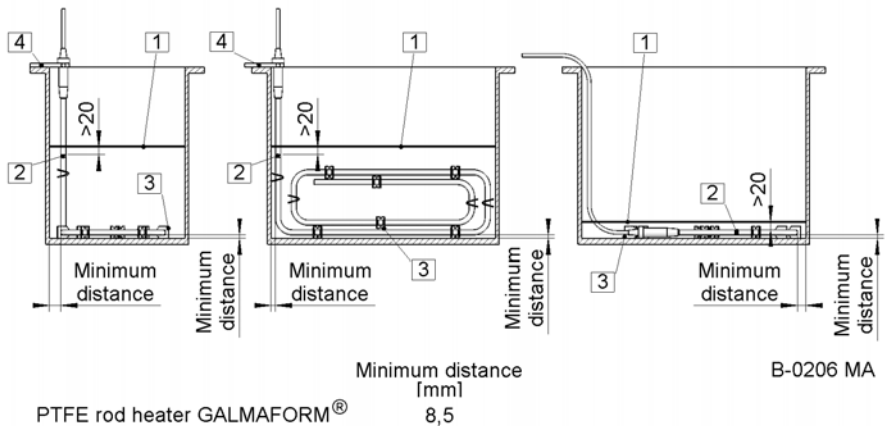
- ⇒ Install the PTFE rod heater so the end of the connection cable never has moisture on it and is never immersed in the fluid.
- ⇒ Do not kink the connection cable or expose it to severe mechanical stress.

Installation

The PTFE rod heater can be completely immersed in the fluid. The PTFE-sheathed connection cable is led out of the fluid and the tank. Make sure that the connection cable is neither kinked nor mechanically damaged. The minimum bending radius of the cable is 100 mm. The end of the cable must be connected to the electrical wiring to provide splash-water protection.

The distance pieces on the PTFE rod heater must be arranged so that the heated area of the rod heater does not touch either the tank or the built-in parts.

The level of the fluid is not allowed to drop below the minimum immersion depth marking under any circumstances during operation, and the rod heater is never allowed to be operated without the heated area being covered by fluid. The PTFE rod heater must be at least 20 mm below the minimum fill level when the heated area is installed horizontally.



Maximum immersion depth: no splash-water oder vaporisation at cable end / connection cords

- 1 Level of liquid
- 2 Minimum immersion depth marking
- 3 Distance piece
- 4 Support

Installation

4.3 Operating conditions

The maximum temperature of the fluid is 140 °C.

Operational limits are imposed under the following conditions:

- Liquid with a high vapour pressure (e.g. organic solvents such as trichloroethylene).
- Molten potassium (K) and sodium (Na) as well as chlorinated and fluorinated hydrocarbons.
- Fluids that liberate large amounts of gas (e.g. H₂O₂ or HCl).
- Use of GALMAFORM® U-FC 25200 is not possible in autocatalytic electrolytes or chemical electrolytes that operate without external current. Danger of metal reduction on the surface of rod heater.
- Use of GALMAFORM® U-FC 25200 is not possible in ultrasonic cleaning solutions and under clean room conditions.
- Physiological innocuousness is only provided by pure-white PTFE-sheathed rod heaters U-FK.

Please contact the manufacturer if you have any queries.

Bending

5. Bending

5.1 Minimum bending radius

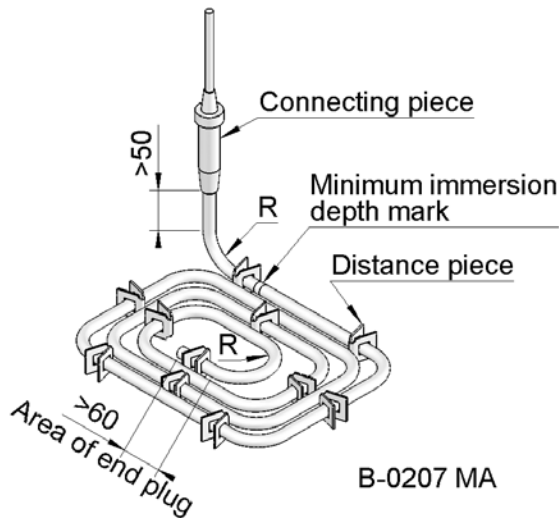
- PTFE rod heater GALMAFORM® U-F...:
30 mm (B-0207 MA)

5.2 Clamping and bending

The rod heater can be bent by the user in cold condition. When bending, make sure that the PTFE sheathing is not damaged by any hard, sharp-edged objects. Do not bend the last 60 mm of the rod heater (area of end plug). Do not bend the connecting piece, including the first 50 mm of the rod heater. Do not bend in the area of the minimum immersion depth marking, 5 mm above and 25 mm below the marking.

5.3 Bending back

Bending back is not allowed under any circumstances.



Electrical connection

6. Electrical connection


Type of current	Number of phases	Connection diagram	Cable colours Connection cable (DIN VDE 0293-308)
Alternating current	Single-phase	L1 N PE	brown blue green/ yellow

Delivered package: With cable without plug.


6.1 Connecting the device

Check the following points before you start:

- ✓ The rated voltage of the PTFE rod heater is the same as the mains voltage.
- ✓ Rod heater material is chemically, mechanically and thermally resistant to the fluid to be heated.
- ✓ Visual inspection of the PTFE rod heater shows no signs of cracking or damage.

 DANGER	<p>Danger of electric shock! Damaged cables or incorrect connection may result high voltage in the process medium.</p> <ul style="list-style-type: none">⇒ Install the PTFE rod heater in such a way that the heated area is a minimum of 10 mm away from heat-sensitive materials and surfaces.⇒ Ensure that the connection cable is not stressed (see also DIN EN 50110-2).⇒ As protection use an RCCB with a trip current of 30 mA, EN 61008-1/2-1.
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Electrical connection

 DANGER	<p>Danger of fire and overheating! Inadequate heat dissipation may result in the PTFE rod heater or heat-sensitive tank parts, etc. being damaged.</p> <ul style="list-style-type: none">⇒ Comply with the minimum immersion depth of the PTFE rod heater.⇒ Clean deposits off the PTFE rod heater at regular intervals. Do not use any mechanical processes for doing this.⇒ Install protection devices in process media that tend to form sludge (for example a conductor plate). Heating a slurry is not permitted.⇒ Make sure the heat can be dissipated well from the PTFE rod heater.⇒ Protect the heated surface of the rod heater against drying out (e.g. install a dry operation guard).
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6.1.1 Connecting the PTFE rod heater

- ⇒ Connect the various wires in the cable separately as shown in the connection diagram. Ensure an all-pole disconnect of the poles with a contact opening distance of at least 3 mm (full separation).

6.2 Testing the device

- ✓ Minimum immersion depth of the PTFE rod heater has been complied with.
 - ✓ No-one is touching the process fluid.
1. Switch on the voltage.
 2. Check the heat generation using a thermometer or check the temperature change in the process fluid by some other suitable method.

The PTFE rod heater is working correctly if the process fluid starts to warm up.

Electrical connection

6.3 Removal



Caution risk of burns!

Touching the heated rod heater may cause burns.

- ⇒ It is essential that you wait approx. 15 minutes to allow the heater to cool.
- ⇒ Ensure that the parts that you wish to remove from the process fluid are cool.

1. Switch off the electrical power supply to the PTFE rod heater.
2. Wait for approx. 15 minutes until the stored heat has been dissipated from the PTFE rod heater.
3. Remove the PTFE rod heater from the tank.

Servicing and maintenance

7. Servicing and maintenance

Any deposits must be cleaned off the PTFE rod heater at regular intervals. As a result of the wide variety of process fluids and ambient conditions at customers' sites it is not possible to provide a general statement here about cleaning methods and servicing cycles.


⇒ If you are in any doubt ask the manufacturer of the process medium.

7.1 Cleaning the device

- ✓ The electrical power supply to the PTFE rod heater must be switched off.
- ✓ The PTFE rod heater has cooled down.
- ⇒ If there are deposits on the PTFE rod heater, contact the manufacturer for advice on which cleaning procedure is suitable.
Do not use mechanical methods to clean the PTFE rod heater.


Transporting/storing the device

8. Transporting/storing the device

 WARNING	<p>Danger of injury! Contact with residue from hazardous substances may cause injury.</p> <p>⇒ Neutralise and clean the contaminated PTFE rod heater before transport and storage. Refer to the safety directives for handling hazardous substances.</p> <p>⇒ Comply with local waste disposal regulations.</p>
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1. Clean any dirt or process fluid residue off the PTFE rod heater using a suitable method.
2. Neutralise the residue from any hazardous substances.
3. Pack the device carefully to protect it from damage and return the device to the manufacturer, giving details of the defects.

8.1 Disposing of the device

 WARNING	<p>Danger of injury! Contact with residue from hazardous substances may cause injury.</p> <p>⇒ Neutralise the PTFE rod heater. Refer to the safety directives for handling hazardous substances.</p> <p>⇒ Clean any dirt or process medium residue off the PTFE rod heater using a suitable method.</p> <p>⇒ Comply with local waste disposal regulations.</p>
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1. Neutralise and remove any parts of the device that contain residue of hazardous substances.
2. Dispose of the device and residue so that they do not harm the environment and in compliance with local regulations.





WG 26/07.12/1

Subject to change!

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